



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/800,228	03/12/2004	Ben Wei Chen	3092P	8561
29141	7590	10/06/2005	EXAMINER	
SAWYER LAW GROUP LLP P O BOX 51418 PALO ALTO, CA 94303			LAM, DAVID	
			ART UNIT	PAPER NUMBER
			2827	

DATE MAILED: 10/06/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)	
	10/800,228	CHEN ET AL.	
	Examiner	Art Unit	
	David Lam	2827	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on 25 October 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2,4,8,11,13,14 and 22 is/are rejected.
- 7) ☒ Claim(s) 1,5-7,9,10,12 and 15-21 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)               | Paper No(s)/Mail Date. _____  |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>10/25/04</u> .  | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

### *Specification*

1. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.
2. The disclosure is objected to because of the following informalities: *On page 22, line 1, transistor "175" should be change to -- 157 --.* Appropriate correction is required.

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Art Unit: 2827

3. Claims 1-2, 4, 8, 11, 13-14, are rejected under 35 U.S.C. 102(b) as being anticipated by Chang (6,097,635).

Regarding to claims 1-2, 4, 8, 13-14, Chang discloses a multilevel flash cell architecture comprising: at least one flash cell (FMC); a plurality of reference generators (23, 24); a plurality of comparators (21,22) coupled to the flash cell via a sensing node and coupled to the plurality of plurality of reference generators; the plurality of the comparator for comparing a signal of the sensing node to a full spectrum (boundary) of reference voltage signals in parallel from the plurality of reference generators; and providing outputs; translation logic (25) coupled to the plurality of comparators for decoding the outputs to determine the state of the flash cell, wherein the most significant bit (MSB) and the least significant bit (LSB) of the state is provided from the translation logic; wherein the full spectrum of reference signals include boundary reference voltage between states and upper and lower target voltage within a state; wherein the at least on flash cell comprises a memory cell array with multilevel states per cell; wherein the translation logic detects when the cell is properly programmed (Won et al. cited to support know position of (. See Figs. 1-10; Cols. 1-5.

As of claim 11, Chang further discloses wherein each reference voltage generator generates a current for each boundary between  $2^n$  states for an upper limit and a lower limit for each state. See Figs. 1-10; Cols. 1-5.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Art Unit: 2827

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claim 22 rejected under 35 U.S.C. 102(b) as anticipated by Chang (6,097,635) or, in the alternative, under 35 U.S.C. 103(a) as obvious over Won et al. (6,625,062).

As per above discussion, Chang discloses the claimed invention but not explicitly disclose wherein the flash memory device further comprising a plurality of memory cell strings each connected to x-y addressable word lines and bit lines.

However, Won et al. disclose a flash memory device comprising: a plurality of memory cell strings each connected to x-y addressable word lines and bit lines. *See Fig. 3.*

It would have been inherently included in Change's flash memory array, if not, it would have been obvious to one having ordinary skill in the modify Chang's memory array by utilizing Won et al.'s teach to form an array that include a plurality of memory cell strings each connected to x-y addressable word lines and bit lines to provide a reliable sensing within the flash memory device.

***Allowable Subject Matter***

5. Claims 3, 5-7, 9-10, 12, 15-21 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:  
The prior art of record fails to teach the above multilevel flash cell architecture and wherein the translation logic detects underprogramming and overprogramming of a flash cell by comparing the sensing node to limits for each state.

***Conclusion***

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Kim et al. (6,717,848) disclose sensing circuit in a multilevel flash memory cell.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David Lam whose telephone number is 571-272-1782. The examiner can normally be reached on 6:00 – 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hoai Ho can be reached on 571-272-1777. The fax phone numbers for the organization where this application or proceeding is assigned is (571) 272-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

**D. Lam**

September 29, 2005

  
**DAVID LAM**  
**PRIMARY EXAMINER**